## REMARKS

This Amendment and the following remarks are intended to fully respond to the Office Action mailed December 11, 2006, hereinafter "Office Action." In that Office Action, claims 1-28 were examined and all claims were rejected. More specifically, claims 1-28 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claim 18 of U.S. Patent No. 6,778,977; claims 1-28 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention; claims 1-28 were rejected under 35 U.S.C. § 101 because the claims are directed to non-statutory subject matter; claims 1-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gupta et al. (USPN 6438562) (hereinafter "Gupta") in view of Blank et al. (USPN 5842208) (hereinafter "Blank"). Reconsideration of these rejections, as they might apply to the original and amended claims in view of these remarks, is respectfully requested.

In this Response, claims 1, 12-14, 18, 20, 24, and 27 have been amended and no claims have been added or cancelled.

### Examiner's Suggestion Under 35 U.S.C. § 122

Examiner notes that incorporation by reference of an application in a printed United States patent constitutes a special circumstance under 35 U.S.C. § 122 warranting that access of the original disclosure of the application be granted. Since the filing of this application, the incorporated Application Serial No. 09/652,942 has matured to United States Patent No. 6,714,938. The specification has been amended to reflect this change, removing the application number and inserting the patent number. In light of these amendments, the Examiner's suggestion is now believed to be moot.

### Double Patenting

Claims 1-28 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claim 18 of U.S. Patent No. 6,778,977. A terminal disclaimer has been filed with this amendment, thus making this rejection moot. Applicants respectfully ask that the double patenting rejection be withdrawn.

## Claim Rejections – 35 U.S.C. § 112

Claims 1-28 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully traverse this rejection.

The Office Action states that limitations found in claims 1-28 are unclear. Applicants respectfully disagree. Various implementations of these limitations are disclosed in the specification accompanying the claims. Applicants note that a patentee is entitled to be his or her own lexicographer. *Vitronics Corp. v. Conceptronics, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). As a result, the claims must be interpreted in light of their accompanying specification. *Id.* Thus, any confusion about the meaning of a limitation associated with a claim can be resolved with reference to the specification. Without limiting the scope of the claims as they stand, Applicants direct the Examiner to non-exclusive examples of implementations found in the specification describing the limitations in question.

An example of a "data structure" is illustrated by Reference Number 300 in Fig. 3. Furthermore, a "data structure is essentially the sub-index and may be a balanced tree, i.e., a B-Tree having multiple levels, and it may or may not be a clustered index." (Application, p. 5, ll. 5-7).

In regards to claim 1, an example of the step of "determining" is provided in Fig. 7. An example of the step of "accessing" is provided on page 5, lines 1-4 and page 10 lines 14-16 in the Application. An example of the step of "filtering" is provided on page 29, lines 4-7 and Table 1 in the Application. An example of the step of "independently creating" is provided on page 15, lines 16-23 of the Application and in Fig. 5 with respect to 504, 506, and 508. An example of the step of "merging" is provided on page 17, lines 5-10 of the Application and in Fig. 5 with respect to 502.

In regards to claim 2, an example of "sorting the records and generating a data structure based on the sorted records" is provided on page 3, lines 1-7 of the Application.

In regards to claim 5, an example of a "clustered index" is provided on page 11, lines 6-9 of the Application.

In regards to claim 6, an example of "gathering sub-index statistical information and stitching sub-index statistical information" is provided on page 4, lines 10-21 of the Application.

In regards to claim 7, an example of the method being "initiated by an index creation manager module" is provided on page 14, lines 3-13 of the Application.

In regards to claim 8, an example of the method being "initiated by a query manager in response to a supplied query" is provided on page 14, lines 14-20 of the Application.

In regards to claim 9, an example of the method being "initiated automatically in response to a modification to the table" is provided on page 18, lines 6-9 of the Application.

In regards to claim 10, an example of a "key field" is provided on page 2, lines 16-17 and lines 20-22 of the Application.

In regards to claim 11, an example of "adjusting the processor goal" is provided on page 5, lines 13-16 and on page 27, lines 3-7 with reference to Modify Goal Operation 726 of Fig. 7 of the Application. An example of "determining processor goal" is provided on page 24, lines 8-21 of the Application. An example of "determining whether the histogram information" is provided on page 25, line 22 through page 26, line 7 of the Application.

In regard to claims 12-26, please refer to the references cited above.

In regards to claim 27, an example of the function of "sampling" is provided on page 15, lines 8-12 of the Application. Please refer to the discussion above regarding claim 1 for examples of "accessing," "filtering," "creating," and "merging." Applicants note that the specification discloses various implementations of different structures and methods used to accomplish the steps defined in the limitations of claim 27. By way of example only and in no way limiting the scope of claim 27, an implementation of a filter function is disclosed in Table 1 on page 29 of the Application.

In regards to claim 28, an example of "means for allocating memory" is provided on page 30, line 11 through page 31, line 2 of the Application.

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The foregoing examples are provided for the Examiner's convenience only and are not intended to limit the scope of the claims in any way; however, it is clear that support for all claim elements exist in the specification. Accordingly, Applicants respectfully request the Examiner withdraw his objection under 35 U.S.C. § 112 ¶ 2.

## Claim Rejections – 35 U.S.C. § 101

Claims 1-28 were rejected under 35 U.S.C. § 101 because the claims are purportedly directed to non-statutory subject matter. Independent claim 1 has been amended to include storing the final index. The specification supports storing the index on page 14, lines 4-6. The indexes allow queries to be resolved much more quickly by providing relatively short paths to desired information. (Application, p.2, ll. 3-5). Storing the index allows another query to make use of the index to access information without having to first reconstruct the index. This saves additional time and allows an even quicker resolution of the query. Thus, the claim accomplishes the useful, concrete, and tangible result of independently creating a plurality of sub-indexes, merging the sub-indexes together to create a final index, and storing the final index and thus is directed towards statutory subject matter under 35 U.S.C. § 101. Independent claims 14, 18, 20, 24, and 27 have been amended to include similar limitations, and thus are also directed towards statutory subject matter under 35 U.S.C. § 101. Indeed, claim 14 recites a store tool that stores the final database table index; claim 18 recites storing a result produced by the first processing unit; claim 20 recites storing the final index; claim 24 recites a store module that stores the final index; and claim 27 recites means for storing the merged sub-indexes. All other claims depend from claim 1, 14, 18, 20, 24, or 27 and, thus, are also directed towards statutory subject matter.

Claims 12 and 13 have been amended to recite a computer readable medium rather than a computer program product. Computer readable medium is not defined in the specification to include a propagated signal, thus making the Office Action's rejection of claims 12 and 13 moot. However, Applicants note that they reserve the right to pursue propagated signal claims in the future. In light of the current amendments, Applicants respectfully request withdrawal of the rejections under 35 U.S.C.§ 101.

## Claim Rejections – 35 U.S.C. § 103

Claims 1-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gupta in view of Blank. Applicant respectfully traverses the §103(a) rejection because either the Office Action has failed to state a *prima facie* case of obviousness or the current amendments to the claims now render the Office Action's arguments moot. In order to establish *prima facie* obviousness under 35 U.S.C. 103(a), three basic criteria must be met, namely: (1) there must be some suggestion or motivation to combine the references or modify the reference teaching; (2) there must be a reasonable expectation of success; and (3) the reference or references when combined must teach or suggest each claim limitation (Manual of Patent Examining Procedure 2142). It is improper to combine Gupta and blank, and the combination of Gupta and Blank fails to teach or suggest each claim limitation. Specifically, neither Gupta nor Blank, alone or in combination, teach independently creating a plurality of sub-indexes as recited in independent claim 1.

Gupta relates to "a method, system, and product for coordinating parallel update for a global index of and indexed table." (Abstract). "Techniques for maintaining a *global index* of a table during parallel data manipulations operations involve a coordinator process, data manipulation slaves and index update slaves. The coordinator process distributes data manipulation operations among a plurality of data manipulation slaves." (col. 8, ll. 1-6) (emphasis added). Maintenance of the global index is performed with the use of Data Manipulation Language ("DML") commands. (col. 4, ll. 43-45). Gupta specifically states that the DML commands supported are "commands to delete rows, insert rows, and update rows." (col. 4, ll. 47-48). No mention is made of creating actual indexes. Instead, Gupta teaches a method using parallel DML ("PDML") operations that accomplishes the "need to update a global index as a result of PDML operations without suffering the deficiencies of lost clustering, or contention for the same block, the latter leading to excessive waits or block pinging." (col. 7, ll. 35-38).

However, as recognized by the Examiner, "Gupta does not specifically teach 'merging the sub-indexes together to create a final index related to the table.'" (Office Action, p. 23, ll. 18-19). Gupta does not mention the creation, use, or modification of a sub-index. Indeed, there

is no teaching, suggestion, or even mention of a sub-index in the reference. Instead, Gupta teaches a method to delete, insert, and update rows of an already existing index. Gupta clearly does not teach or suggest independently creating a plurality of sub-indexes.

Blank relates to a "recover/build index system [that] builds an index for a file by scanning partitions of the file in parallel to retrieve key/rid values. The recover/build index system then sorts the scanned key/rid values for each partition in parallel." (col. 1, ll. 37-41). After the data is sorted in parallel, a "merge program merges the sort streams received from the sort programs to create a merge stream. The merge program accepts the sort stream from two or more sort programs. The merge program then passes the merge stream to an index build program." (col. 3, ll. 10-14). Thus, Blank teaches a method where a parallel sort is merged via combining the data streams produced by two or more sorts into a single data stream. Although this teaching allows for the streamlined production of an index, it does not teach or suggest the limitations of the claims. At no point does Blank teach or suggest the use of sub-indexes. In fact, Blank teaches away from the independent creation of sub-indexes. The individual sort programs do not produce sub-indexes. Instead, the sort programs produce a sort stream. (col. 3, ll. 10-11). The resulting sort streams are collected by a merge program that combines the multiple sort streams into a single merge stream. (col. 3, ll. 12-15). Blank then teaches that this single merge stream, not a plurality of sub-indexes, is used to create an index. "[T]he index build program builds the index from the merge stream received from the merge program." (col. 3, ll. 19-20). At no point in Blank's teachings are sub-indexes created or even mentioned. Thus, Blank fails to teach or suggest independently creating a plurality of sub-indexes.

The act of independently creating a plurality of sub-indexes has a non-exclusive benefit of providing additional efficiency over the method described in Blank. The creation of separate sub-indexes maximizes the use of multiple, parallel processors, which are employed throughout the sub-index creation and right up until the sub-indexes are combined into a final index. On the other hand, Blank discloses a method in which multiple processors are only used to sort the data. The multiple sort streams are merged into a single merge stream from which a single processor must then perform the index build program to build the index. Thus, the creation of sub-indexes, which is clearly not disclosed by either Blank or Gupta, alone or in combination, provides at

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least the additional, non-exclusive benefit of maximizing the use of multiple processors to build the final index.

For the forgoing reasons, neither Gupta nor Blank individually or in combination teach or suggest all of the limitations of independent claim 1. The Examiner has also not demonstrated sufficient motivation for one of ordinary skill in the art to combine Gupta and Blank. Considering that Gupta makes no mention of sub-indexes and Blank teaches directly away from the use of sub-indexes, Applicants respectfully submit that the combination of Gupta and Blank is improper and base solely on impermissible hindsight in view of Applicants' own specification. See, e.g., *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

Furthermore, independent claims 14, 18, 20, 24, and 27 include similar limitations to claim 1. For example, claim 14 recites <u>wherein each of the respective processing units creates a sub-index of database table records  resulting in a plurality of sub-indexes</u>; claim 18 recites <u>wherein at least one partition is dedicated to a first processing unit for index creation and at least one other partition is dedicated a second processing unit for index creation</u>;  claim 20 recites <u>independently creating a plurality of sub-indexes</u>; claim 24 recites <u>each index creation module creates a sub-index resulting in a plurality of sub-indexes</u>; and claim 27 recites <u>means for creating two or more sub-indexes of relevant records</u>. Thus, independent claims 1, 14, 18, 20, 24, and 27 are allowable over the prior art of record and should be allowed. All other claims, i.e. claims 2-13, 15-17, 19, 21-23, 25-26 and 28 depend from the allowable independent claims and are, thus, also allowable over the prior art of record. Therefore, Applicant respectfully requests that the Examiner issue a notice of allowance for all claims.

## Conclusion

This Amendment fully responds to the Office Action mailed on December 11, 2006. Still, that Office Action may contain arguments and rejections that are not directly addressed by this Amendment due to the fact that they are rendered moot in light of the preceding arguments in favor of patentability. Hence, failure of this Amendment to directly address an argument raised in the Office Action should not be taken as an indication that the Applicant believes the

argument has merit.  Furthermore, the claims of the present application may include other elements, not discussed in this Amendment, which are not shown, taught, or otherwise suggested by the art of record.  Accordingly, the preceding arguments in favor of patentability are advanced without prejudice to other bases of patentability.

It is believed that no further fees are due with this Response.  However, the Commissioner is hereby authorized to charge any deficiencies or credit any overpayment with respect to this patent application to deposit account number 13-2725.

In light of the above remarks and amendments, it is believed that the application is now in condition for allowance and such action is respectfully requested.  Should any additional issues need to be resolved, the Examiner is requested to telephone the undersigned to attempt to resolve those issues.

Respectfully submitted,

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